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	105	156/230-241,247,277,289.ccls. and transferable same release	USPAT;	2003/06/07 12:17
			US-PGPUB;	
			EPO; JPO;	
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			IBM TDB	
2	2157	427/146-149.ccls. or 428/195,914.ccls. and transferable same release	USPAT;	2003/06/07 12:32
ı			US-PGPUB;	
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		(156/230-241,247,277,289.cc	US-PGPUB;	
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7	31	37904	1 "3922435"	4224358"	1 "4235657"	1 "4399209"	1 "4548857"	USPAT	2003/06/07 10:56
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		5362703	1 "5407724"	=	"5707925"	5770	"5798161"		
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		276	1 "5021275"	1.5026584"	"5047103"	"5073423"	5098772"		
		12423	"51436/2" "5302223"	5149388" 5313645"	"516//5U"	2136080"	"5200268" "5233135"		
		69347	557	"5597641"	1.5598202"	"5612140"			
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17	m	("5169476"	1 "5785795"	"6296034")	. PN.			USPAT	2003/06/07 10:58
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26	10		"4078886" "E64696911	1 "4605418"	1 "5411931"	"5431501"	"5470818"	USPAT	2003/06/07 10:59
29	2	(15)	1 "5783024")	Λ.	1.0/0000			USPAT	
32	31	("33	"429464	1 "4326005"	1 "4329698"	1 "4455147"	1 "4500895"	USPAT	2003/06/07 11:00
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		24.	4 9 8 0 2 2		"5139917"	"5236801"	#5246518"		
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37	. 13	284	"4999075" "5787502"		1 "5201976"	1 "5275684"	"5316608"	USPAT	2003/06/07 11:01
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40	15	"3434	"42872	= 1	1 "4617080"	1 "4687526"	1 "5060981"	USPAT	2003/06/07 11:01
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45	4	17385	σ		1 "5486057")	. PN.		USPAT	2003/06/07 11:02
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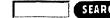
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Overview - Polyester Film

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Melt Flow

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60 g/10 min

Grade

Download to Excel (requires Excel and Windows)

Subcategory: Film; Polyester, TP; Polymer; Thermoplastic

Close Analogs: Click the button to view the proprietary polymer grades listed in MatWeb that belong to this class. Please be a that some proprietary polymers may not be listed because they fall into more than one class or because of ambiguity in manufacturer's information.

Proprietary Grades

Key Words: Plastics, Polymers

The property data has been taken from proprietary materials in the MatWeb database. Each property value reported is the ave of appropriate MatWeb entries and the comments report the maximum, minimum, and number of data points used to calculate value. The values are not necessarily typical of any specific grade, especially less common values and those that can be most affected by additives or processing methods.

Physical Properties	Metric	English	Comm
Density	1.25 - 1.4 g/cc	0.0452 - 0.0506 lb/in³	Ave 1.35 Grade C
Water Absorption	0.5 %	0.5 %	Grade
Moisture Absorption at Equilibrium	0.2 %	0.2 %	Grade
Water Absorption at Saturation	0.5 %	0.5 %	Grade
Moisture Vapor Transmission	0.012 - 1.2 cc-mm/m²-24hr-atm 0	.0305 - 3.05 cc-mil/100 in²-24hr-atm	Ave 0.58 g-m 24h Grade C
Oxygen Transmission	0.02 - 17.9 cc-mm/m²-24hr-atm 0	.0508 - 45.5 cc-mil/100 in²-24hr-atm	Average cc-m 24h Grade C
Linear Mold Shrinkage	0.0045 - 0.03 cm/cm	0.0045 - 0.03 in/in	Ave 0.017 c Grade C

60 g/10 min

Mechanical Pr	operties
---------------	----------

Tensile Strength, Ultimate	41 - 225 MPa	5950 - 32600 psi	Ave 180 Grade C
Film Tensile Strength at Break, TD	41 - 290 MPa	5950 - 42100 psi	Ave 240 Grade C
Film Elongation at Break, TD	60 - 445 %	60 - 445 %	Ave 83.6%; Count
Tensile Strength, Yield	35.2 - 55 MPa	5110 - 7980 psi	Ave 45.1 Grade C
Elongation at Break	30 - 440 %	30 - 440 %	Ave 120%; Count
Elongation at Yield	4 %	4 %	Grade
Tensile Modulus	2.7 - 3.79 GPa	392 - 550 ksi	Average GPa; Coun
Flexural Modulus	<u>2.8 GPa</u>	406 ksi	Grade
Secant Modulus	1.72 - 3.79 GPa	249 - 550 ksi	Average GPa; Coun
Secant Modulus, TD	1.76 - 2.025 GPa	255 - 294 ksi	Ave 1.9GPa; Cou
Charpy Impact, Unnotched	22 J/cm²	105 ft-lb/in²	Grade
Charpy Impact, Unnotched Low Temp	0.4 J/cm²	1.9 ft-lb/in²	Grade
Charpy Impact, Notched	<u>0.5 J/cm²</u>	2.38 ft-lb/in ²	Grade
Coefficient of Friction	0.2 - 0.5	0.2 - 0.5	Ave 0.39; Cou
Coefficient of Friction, Static	0.5 - 0.6	0.5 - 0.6	Ave 0.51; Co
Tensile Creep Modulus, 1 hour	2400 MPa	348000 psi	Grade
Tensile Creep Modulus, 1000 hours	1400 MPa	203000 psi	Grade
Seal Strength	102 - 3000 g/25 mm	102 - 3000 g/in	Ave 580 g/2 Grade C

Electrical Properties

Electrical Resistivity <u>1e+015 ohm-cm</u> 1e+015 ohm-cm Grade

Surface Resistance	['] 1e+015 ohm	1e+015 ohm	Grade
Dielectric Constant	3.2	3.2	Grade
Dielectric Constant, Low Frequency	3.4	3.4	Grade
Dielectric Strength	28 kV/mm	711 kV/in	Grade
Dissipation Factor	0.019	0.019	Grade
Dissipation Factor, Low Frequency	0.002	0.002	Grade
Comparative Tracking Index	600 V	600 V	Co
Thermal Properties			
CTE, linear 20°C	<u>130 μm/m-°C</u>	72.2 µin/in-°F	Co
CTE, linear 20°C Transverse to Flow	<u>130 µm/m-°С</u>	72.2 µin/in-°F	Co Co
Melting Point	220 - 255 °C	428 - 491 °F	Ave 230°C; Cou
Maximum Service Temperature, Air	60 - 225 °C	140 - 437 °F	Ave 150°C; Count
Deflection Temperature at 0.46 MPa (66 psi)	<u>160 °C</u>	320 °F	Со
Deflection Temperature at 1.8 MPa (264 psi)	<u>60 °C</u>	140 °F	Со
Vicat Softening Point	<u>170 °C</u>	338 °F	Grade
Minimum Service Temperature, Air	<u>-40 °C</u>	-40 °F	Grade
Glass Temperature	70 - 75 °C	158 - 167 °F	Ave 72.5°C; Cou
Flammability, UL94	НВ	НВ	Grade
Oxygen Index	24 %	24 %	Grade
Optical Properties			
Haze	0.2 - 12 %	0.2 - 12 %	Ave 6%; Coun
Gloss	105 - 200 %	105 - 200 %	Ave 170%; Coun
Transmission, Visible	70 - 90 %	70 - 90 %	Ave 79%; Coun
Processing Properties			
Processing Temperature	154 - 275 °C	309 - 527 °F	Ave 190°C;

Coun

Nozzle Temperature

280 °C

536 °F

Grade

Drying Temperature

130 - 170 °C

266 - 338 °F

Ave 150°C;

Cou

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Atohaas Americas Plexiglas® V052 General Purpose Acrylic Resin

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Subcategory: Acrylic; Polymer; Thermoplastic

Close Analogs: Data provided by the manufacturer.

Key Words: Poly(methyl methacrylate); PMMA; Polymethylmethacrylate

Material Notes:

For injection molding. Superior mold release.

No vendors are listed for this material. Please click here if you are a supplier and would like information on how to add your lis to this material.

Physical Properties	Metric	English	Comm
Density	1.19 g/cc	0.043 lb/in ³	ASTM
Water Absorption	0.3 %	0.3 %	24 hr immersion; ASTM
Linear Mold Shrinkage	0.002 - 0.006 cm/cm	0.002 - 0.006 in/in	cold mold to cold piece - 48 hrs;
Melt Flow	2.8 g/10 min	2.8 g/10 min	Condition I; ASTM D
Mechanical Properties			
Hardness, Rockwell M	96	96	ASTM
Tensile Strength, Ultimate	70.3 MPa	10200 psi	ASTM
Flexural Modulus	<u>3.1 GPa</u>	450 ksi	
Flexural Yield Strength	Max 103 MPa	Max 14900 psi	ASTM
Izod Impact, Notched	<u>0.12 J/cm</u>	0.225 ft-lb/in	ASTM
Gardner Impact	<u>1.4 J</u>	1.03 ft-lb	J; Falling Dart 15 cm x 15 cm x 0.3 c kg dart; 6.4 mm
Thermal Properties			
Melting Point	<u>130 °C</u>	266 °F	
Maximum Service Temperature, Air	74 - 88 °C	165 - 190 °F	
Deflection Temperature at 1.8 MPa (264 psi) <u>93 °C</u>	199 °F	Annealed; ASTM
Vicat Softening Point	<u>103 °C</u>	217 °F	Unannealed, 50°C/hr, 1 kg; ASTM D
Glass Temperature	<u>105 °C</u>	221 °F	ASTM D

Optical Properties

Refractive Index
Haze
Transmission, Visible

1.49 Max 2 %

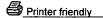
92 %

1.49 Max 2 %

92 %

ASTM ASTM D

Total White Light; ASTM D



Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistant format. Users more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We a that you only use the original value or one of its raw conversions in your calculations to minimize rounding error. We also ask that you refer to MatWeb's disclaimer and of use regarding this information. Click here to view all the property values for this datasheet as they were originally entered into MatWeb.



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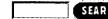
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Overview - Polyester Thermoplastic Elastomer

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Material supp

Subcategory: Elastomer, TPE; Polyester, TP; Polymer; Thermoplastic

Close Analogs: Click the button to view the proprietary polymer grades listed in MatWeb that belong to this class. Please be a that some proprietary polymers may not be listed because they fall into more than one class or because of ambiguity in manufacturer's information.

Proprietary Grades

Key W rds: TPE; Plastics, Polymers

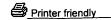
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Physical Properties	Metric	English	Comm
Density	1.07 - 1.43 g/cc	0.0387 - 0.0517 lb/in³	Average = 1.2 g/cc; Coun
Water Absorption	0.08 - 5 %	0.08 - 5 %	Average = 0.976%; Coun
Moisture Absorption at Equilibrium	0.4 %	0.4 %	Grade Cou
Water Absorption at Saturation	7 %	7 %	Grade Cou
Linear Mold Shrinkage	0.01 - 0.02 cm/cm	0.01 - 0.02 in/in	Average = 0.015 c Grade Coun
Melt Flow	1.8 - 23 g/10 min	1.8 - 23 g/10 min	Average = 10.2 g/1 Grade Coun
Mechanical Properties			
Hardness, Shore D	30 - 82	30 - 82	Average = 50; Grade C
Tensile Strength, Ultimate	10.2 - 55 MPa	1480 - 7980 psi	Average = 30.1 MPa; Coun
Tensile Strength, Yield	2.1 - 30.3 MPa	305 - 4390 psi	Average = 8.6 MPa; Coun
Elongation at Break	200 - 850 %	200 - 850 %	Average = 480%; Grade
Tensile Modulus	0.092 - 2.4 GPa	13.3 - 348 ksi	Average = 0.74 GPa;

			Cou
Flexural Modulus	0.0248 - 2.41 GPa	3.6 - 350 ksi	Average = 0.28 GPa; Coun
Flexural Yield Strength	48 - 83 MPa	6960 - 12000 psi	Average = 65.5 MPa, Cou
Compressive Yield Strength	<u>21 MPa</u>	3050 psi	Grade Co
Izod Impact, Notched	0.4 - NB	0.749 - NB	Average = 13.2 J/c computed as 15 J/cm); Coun
Izod Impact, Unnotched	NB	NB	Grade Cou
Izod Impact, Notched Low Temp	0.2 - NB	0.375 - NB	Average = 3.6 J/c computed as 7.5 J/cm); Coun
Taber Abrasion, mg/1000 Cycles	3 - 15	3 - 15	Average = 6.6 mg Cycles; Grade Cou
Electrical Properties			
Electrical Resistivity	1e+010 - 1e+016 ohm-cm	1e+010 - 1e+016 ohm-cm	Average = 3E+15 oh Grade Cou
Surface Resistance	1e+013 ohm	1e+013 ohm	Grade Cou
Dielectric Constant	4.6 - 4.9	4.6 - 4.9	Average = 4.8; Grade C
Dielectric Constant, Low Frequency	5.3	5.3	Grade Cou
Dielectric Strength	19.7 kV/mm	500 kV/in	Grade Cou
Dissipation Factor	0.035 - 0.04	0.035 - 0.04	Average = 0.038; Grade
Dissipation Factor, Low Frequency	0.025	0.025	Grade Cou
Arc Resistance	<u>40 sec</u>	40 sec	Grade Co
Thermal Properties			
CTE, linear 20°C	81 - 221 μm/m-°C	45 - 123 μin/in-°F	Average = 170 μm Grade Co
Thermal Conductivity	<u>0.14 W/m-K</u>	0.972 BTU-in/hr-ft2-°F	Grade Cou
Melting Point	150 - 223 °C	302 - 433 °F	Average = 190°C; Coun
Maximum Service Temperature, Air	38 - 148 °C	100 - 298 °F	Average = 65.6°C; Coun
Deflection Temperature at 0.46 MPa (66 psi)	42 - 157 °C	108 - 315 °F	Average = 84.2°C; Cou
Deflection Temperature at 1.8 MPa (264 psi)	38 - 67 °C	100 - 153 °F	Average = 47.7°C; Cou
Vicat Softening Point	76 - 212 °C	169 - 414 °F	Average = 150°C; Coun
Minimum Service Temperature, Air	-7065 °C	-9485 °F	Average = -69.4°C; Cou
Brittleness Temperature	-7065 °C	-9485 °F	Average = -69.4°C; Co
Flammability, UL94	НВ	НВ	Grade Coun
Processing Pr perties			
Processing Temperature	190 - 241 °C	374 - 466 °F	Average = 200°C; Coun
Mold Temperature	<u>52 °C</u>	126 °F	Grade Cou
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